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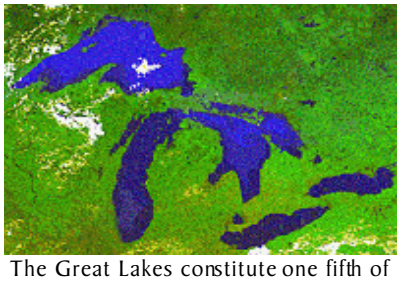
Great Lakes Environmental Research Laboratory

Stewards of the Great Lakes



The Great Lakes constitute one fifth of the world's surface fresh water supply and 95 percent of U.S. quantities. Intelligent care of these resources is vital to the Nation's sustained economic and environmental well-being.

Declining Lake Michigan water levels to near-record lows during 1999-2000 have led to widening beaches, while at the same time creating costly problems for commercial shipping, recreational boating and marinas.

Storm-d ents in Great Lakes coastal areas pose threats to life and property and require science-based measures to reduce the risk and damage of such hazards.

1315 East West Hwy
Silver Spring, MD 20910
301-713-1671
www.oar.noaa.gov

WhatWhat does the Great What does the Great LakesWhat does the Great Lak do for the nation?

GreatGreat Lakes Environmental ResearchGreat Lakes Environmental Research Labora protectprotect life andprotect life and property, economic well-being, and sustainprotect li healthhealth of the Great Lakes and other U.S. coastal ecosystehealth of the Great L provideprovidesprovides coastal constituents and Federal, State and internatioprovides co andand policyand policy makers with scientific understanding of the sources, pathways, fates,fates, and effefates, and effects of tfates, and effects of toxicants; natural haza ststormstorm surges, and ice; ecosystems and their interactions, including storm surg threatthreat and impactthreat and impact of invasthreat and impact of invasive specie watwaterwater levels of the Great Lakes; and regional effects related to glwater leve climate change.

GLERLGLERL carries out research andGLERL carries out research and GLERL carri andand servicesand services required forand services required for effective manageme Lakes and coastal ecosystems. Key scientific activities include:

- ExplainingExplaining and predicting changes in water resourExplaining and pred levels, and ice cover.
- Tracking the spread of invasive (exotic) species and determining their impact on Great Lakes and coastal ecosystem health.
- IdentifyingIdentifying sources, pathways, and fate of toxic contaminants aIdentifyin as they are cycled through food webs in aquatic ecosystems.
- Examining the potential impact of climate and global change on Great Lakes water quantity and quality.
- InvestigatingInvestigating nearshore hydrodynamic processes affectInvestigating health, life, property and environmental quality.

Recent Accomplishments:

- DeterminedDetermined if the interaction of zebDetermined if the intera mussel-infestedmussel-infested areas of the Great Lakes is linked wmussel-infe blue-greenblue-green algal blooms in thoseblue-green algal blooms in those areas. ***I ofof blue-green bloomsof blue-green blooms will help managers developof blu addreaddressaddress taddress the problem of blooms of algae that caus problems to water supplies.***
- DevelopedDeveloped improved water-level statistics that reflect:Developed improve andand hydraulic conditions; (2) the longer-term responseand hydraulic conditions; (2 (3)(3) changes in climatic; and (4) the diverse needs(3) changes in clima ddecision-makers.decision-makers. ***Payoffs: Assessing changes in the Gr seasonseasonalseasonal water level cycles will improve both our underst environmentalenvironmental processes and our predictive capabilenvironm improved water resource management decisions.***

" DeterminedDetermined the importance of episodic events, e.g. storms, runoff-events, dowDetermined the importa iceice cover, and thermaice cover, and thermal ice cover, and thermal bar formation, to the structure and ecosecosystems.ecosystems. ***Payoffs: Incorporation of the effects of episodic events into ecosystePayo willwill improve predication of, and management response to, both anthwill improve predication of, perturbations to ecosystem structure and function.***

What s Next for GLERL?

Scientific Challenges in the next five to 10 years:

" ExpandExpand and improve scientific knowledge of aquatic ecosystems, andExpand and improve scientific Lakes and marine coastal environments.

" DevelopDevelop new tools, approaches, and concepts for improvedDevelop new tools, approaches, and conce of issues within the Great Lakes and coastal environments.

" Provide services and expert information to the scientific, regulatory and coastal-user communities.

" ProvideProvide theProvide the general public with information and services to enhance public awareness,Provide and safety.

" LeadLead and coordinate multi-institutional scientific progrLead and coordinate multi-institutional scientific program coastal aquatic environments.

Research Partnerships:

TheThe CooThe CooperatiThe Cooperative Institute for Limnology and Ecosystems Research (CILER) Joint/CooperativeJoint/Cooperative Institute dedicated to freshwater research. Established iJoint/Cooperative I collaborativecollaborative research between GLERL, the University of Michigan, collaborative research between GL academic institutions throughout the Great Lakes Basin.

TheThe Cooperative Institute for Climate and Ocean Research (CICOR),The Cooperative Institute for Climate and O NOAANOAA laboratories and the Woods HoleNOAA laboratories and the Woods Hole Oceanographic Institution. C oceanocean and nearshoreocean and nearshore processes, the ocean s role in climate and climatic variability, and ma processes. GLERL is the host NOAA institution.

Additionally,Additionally, through partnerships, GLERL conducts collaborative research with a wide array of researc institutions at the state, regional, national and international levels.

Budget and Staff:

GLERLGLERL is an $8.5 million laboratory ($6.5 million of NOAA bGLERL is an $8.5 million laboratory ($6.5 mill field station in Muskegon, Michigan. GLERL has 81 employees, including 59 federal and 22 university.

GLERL
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For more information, contact:
Dr. Stephen Brandt, Director
Great Lakes Environmental Research Laboratory
2205 Commonwealth Blvd
Ann Arbor, MI 48105-2945
Phone: (734)741-2244
http://www.glerl.noaa.gov